

LAWRENCE LIVERMORE REPORT

A weekly collection of scientific and technological achievements from Lawrence Livermore National Laboratory: Oct. 20-Oct. 27, 2008.

***New Scientist* profiles Lab work on traumatic brain injury**



A recent edition of *New Scientist* features research conducted by the Laboratory's Willy Moss and colleagues, who have created computer simulations that outline the effects on the brains of soldiers who have been exposed to explosions.

The team created a computer simulation of a blast wave passing through a soldier's helmet and skull and into the brain. The conditions simulated corresponded to the blast created by 2.3 kilograms of C4 explosive detonated 4.6 meters from the soldier, which the team says is a plausible real-world scenario.

Their results show that the blast wave would cause the human skull to bend as it passes through, generating pressures in the brain comparable to those created when hitting your head in a violent car crash.

To read the article see:

https://newsline.llnl.gov/_rev02/articles/2008/oct/images/new_scientist.pdf

LLNL scientist interviewed on American Chemical Society's podcast



Laboratory scientist Reginald Beer is featured on a recent American Chemical Society (ACS) podcast called "Global Challenges." The program details how chemistry is responding to challenges and are improving and sometimes saving people's lives.

Beer discusses a new disposable device that would detect specific DNA and RNA molecules associated with diseases and infections.

To see "Combating Disease" go to

<http://web.1.c2.audiovideoweb.com/1c2web3536/GlobalChallengesEp7.mp3>

Beer also is featured on a "Meet the Scientist" section of the ACS Web page at http://portal.acs.org/portal/acs/corg/content?nfpb=true&pageLabel=PP_ARTICLEMAIN&node_id=2105&content_id=WPCP_010857&use_sec=true&sec_url_var=region1

Science Channel features Lab's diode laser



"Sci-Fi Science", formerly called "Tabloid Science," aired a segment on the LLNL's Solid State Heat Capacity Laser (SSHCL) on the Science Channel on Sunday, Oct. 26

The SSHCL is a diode-pumped, solid-state heat-capacity laser suitable for use in the military. A mobile, compact and lightweight SSHCL laser system capable of being deployed on a variety of platforms also is under development.

To see the program, go here

https://publicaffairs.llnl.gov/news/llnl_reports/science_lasers_26oct2008.mov

CBS radio airs story on Lab's antineutrino detector



A team of scientists at the Laboratory have helped develop a successful prototype of an antineutrino detector that can monitor nuclear reactors quickly and accurately over hour-to month time scales.

The new detector allows for operational status and thermal power of reactors to be quickly and precisely monitored using a cubic-meter-scale antineutrino detector.

The reporter interviews Adam Bernstein of the Lab's Advanced Detector Group, who is the project's principle investigator. He works on the detector development project with colleagues Nathaniel Bowden, Steven Dazeley and Robert Svoboda at LLNL as well as collaborators at Sandia National Laboratories.

To hear the interview, go to <http://www.ucop.edu/sciencetoday/article/18782>

Two teams earn Laboratory S&T awards



The Lab climate team that contributed to the Scientific Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC) with Director George Miller (far right).

The Lab team that contributed to the climate report that earned the 2007 Nobel Peace Prize and the team that won two Gordon Bell prizes for breakthrough computer simulations were honored by Director George Miller recently with Laboratory Science and Technology Awards.

Led by Dave Bader, the Lab climate team contributed to the Scientific Assessment Reports of the Intergovernmental Panel on Climate Change (IPCC) that shared the 2007 Nobel Peace Prize with former Vice President Al Gore.

Team members include: Jennifer Aquillino; David C. Bader; Daniel J. Bergmann, Celine J. W. Bonfils; James S. Boyle; Philip J. Cameron-smith; Chien-Hua Chuang; Curtis C. Covey; Charles Doutriaux; Robert S. Drach; Phillip Duffy; Peter Gleckler; Kyle Halliday; Anthony Hoang; Stephen Klein; Renata McCoy; Arthur Mirin; Velimir Mlaker; Thomas J. Phillips; Benjamin Santer; Kenneth R. Sperber; John R. Tannahill; Karl Taylor; Michael E. Wickett; and Dean Williams.

The other award went to the computational scientists who performed ground-breaking materials simulations at unprecedented scale on the BlueGene/L computer that earned two Gordon Bell Prizes -- widely regarded as the Oscars of supercomputing.

Team members include: Kyle Casperson; Bor Chan; Bronis R. de Supinski; James N. Glosli; Mehul Patel; David F. Richards; Robert E. Rudd; Frederick H. Streitz; Robert K. Yates.

For more information, see

https://newsline.llnl.gov/_rev02/articles/2008/oct/10.17.08-climate.php and

https://newsline.llnl.gov/_rev02/articles/2008/oct/10.17.08-award.php

Latest edition of weekly *Newsline* available



Newsline provides the latest lab research and operations news.
See the latest issue at https://newsline.llnl.gov/_rev02/index.php

Photo of the week



Fire in the hole -- Maureen Alai, Ron Baskett and Matthew Simpson of the Lab's National Atmospheric Release Advisory Center (NARAC) monitor gases emitted from Kilauea, the youngest and southeastern most volcano on the Big Island of Hawaii. Kilauea originally erupted in 1983 and continues to spew gases and magma. NARAC provides tools and services that map the probable spread of hazardous material – nuclear, radiological, chemical, biological or natural emissions -- accidentally or intentionally released into the atmosphere. The center provides atmospheric plume predictions in time for an emergency manager to decide if taking protective action is necessary to protect the health and safety of people in affected areas.

LLNL is managed by Lawrence Livermore National Security, LLC, for the U.S. Department of Energy's National Nuclear Security Administration.

LLNL applies and advances science and technology to help ensure national security and global stability. Through multi-disciplinary research and development, with particular expertise in high-energy-density physics, laser science, high-performance computing and science/engineering at the nanometer/subpicosecond scale, LLNL innovations improve security, meet energy and environmental needs and strengthen U.S. economic competitiveness. The Laboratory also partners with other research institutions, universities and industry to bring the full weight of the nation's science and technology community to bear on solving problems of national importance.

To send input to the Livermore Lab Report, send e-mail
<mailto:labreport@llnl.gov>.

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